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ANTIFUNGAL ACTIVITY OF SOME EXOTICS PLANT EXTRACTS AGAINST FRUIT ROTS FUNGAL PATHOGENS

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ABSTRACT

Exotics plant extract of twenty plants from different families were tested for their antifungal activity against important saprophytic fruit rotting fungal species such as *Alternaria alternata, Cladosporium tenuissimum, Colletotrichum gloeosporioides, Fusarium oxysporum, Penicillium digitatum* and *Rhizopus stolonifer* which isolated from aonla, mango, papaya and lemon fruit samples. The test fungi were mainly associated with fruit as saprophytic mode during storage. Among twenty plants tested, aqueous extract of *Acacia farnesiana, Acacia nilotica , Argemone mexicana , Ricinus communis, Nerium indicum, Erythrina variegate, Datura metal, Coccinia grandis, Terminalia arjuna, Lantana camara, Calotropis gigantea, , Boerhavia repens, Catharanthus roseus , Coccinia grandis , Ipomoea carnea , Cannabis sativa and Euphorbia geniculata* have recorded significant antifungal activity against important fruit rotting fungal species tested. This PCE was higher due to It was found that *Acacia farnesiana (*70.32%) against *Fusarium oxysporum*, *Acacia nilotica* (76.66%) against *Fusarium oxysporum*, *Ricinus communis* (73.16%) against *Cladosporium*

tenuissimum, *Terminalia arjuna* (75.12%) against *Colletotrichum gloeosporioides*, *Boerhavia repens* (74.16%) against *Cladosporium tenuissimum*, *Coccinia grandis* (75.16%) against *Penicillium digitatum* , *Ipomoea carnea* (74.16%) against *Penicillium digitatum*, *Euphorbia geniculata*(70.10%) against *Rhizopus stolonifer* and *Argemone mexicana* (72.80%) against *Alternaria alternata* showed the maximum percentage of disease control efficacy. *Lawsonia inermis*, *Jatropha curcas*, and *Cassia fistula* showed the less percent of disease control efficacy against selected fungi.

KEYWORDS

Exotics plant extract, fruit rotting fungi, storage fruit

RESEARCH PAPER

Introduction

The diseases of post-harvested fruits rot due to fungal pathogen cause quality degradation of fruits which are known post-harvest diseases. Post-harvest diseases of fruits represent one of the most severe losses of production. Post-harvest losses of fresh fruits are one of the most important problems of the tropical Asian countries like India. Appropriate storage and processing methods can curative the post harvest losses to 30% and make the fruit available for longer period. A few post-harvest technologies that exist are complex and are unaffordable to the marginal and small farmers at the farm level. In recent years, increased public concern about the chemical residues in food and development of resistance by pathogens to major pesticides emphasized the need to find alternative means for controlling post-harvest diseases by a viable option is biological control.

The use of chemical pesticides is a very popular practice to control various plant diseases management as compare to natural one which is prepared from plants or plant parts but, consumer now demands less use of synthetic fungicides due to the non-biodegradability, pollute nature and residual toxicities of chemical pesticides. In the present research, only relevant work done on the effect of various toxic chemicals, growth regulators and fungicides on extension of shelf life of fruits management of post- harvest diseases of fruits has been briefly reviewed to focus light on our existing knowledge, highlighting the lacunae and assess the needs of future work. Eunice, O.N. and Osuji, J.O. (2008). Evaluation of plant extracts for antifungal activity against *Sclerotium rolfsii* causing cocoyam cormel rot in storage. Johnny, L. Yusuf, U.K. and Nulit, R. (2011).

Antifungal activity of selected plant leaves crudeextracts against a pepper anthracnose fungus, *Colletotrichum capsici.* Prince and P. Prabakaran, 2011 Antifungal activity of medicinal plant against storage fruit pathogenic fungus *Colletotrichum falcatum.* R.G. Jat and et al, 2013 Management of *Aspergillus* and blue mold rot of anola fruits through plant extract (*A. indica*) control. Plant extracts of many higher plants have been reported to exhibit antibacterial, antifungal and insecticidal properties under laboratory trails (Satish *et al*., 1999; Okigbo and Ogbonnaya, 2006; Shariff *et al*., 2006; Bouamama *et al*., 2006; Ergene *et al*., 2006; Kiran and Raveesha, 2006; Mohana and Raveesha, 2006).

MATERIALS AND METHODS

Saprophytic pathogen was collected and isolated from contaminated different storage fruit. Shirshikar, S. P. and D. N. Kadam (1992) Efficacy of Neem leaf extract against foliar disease

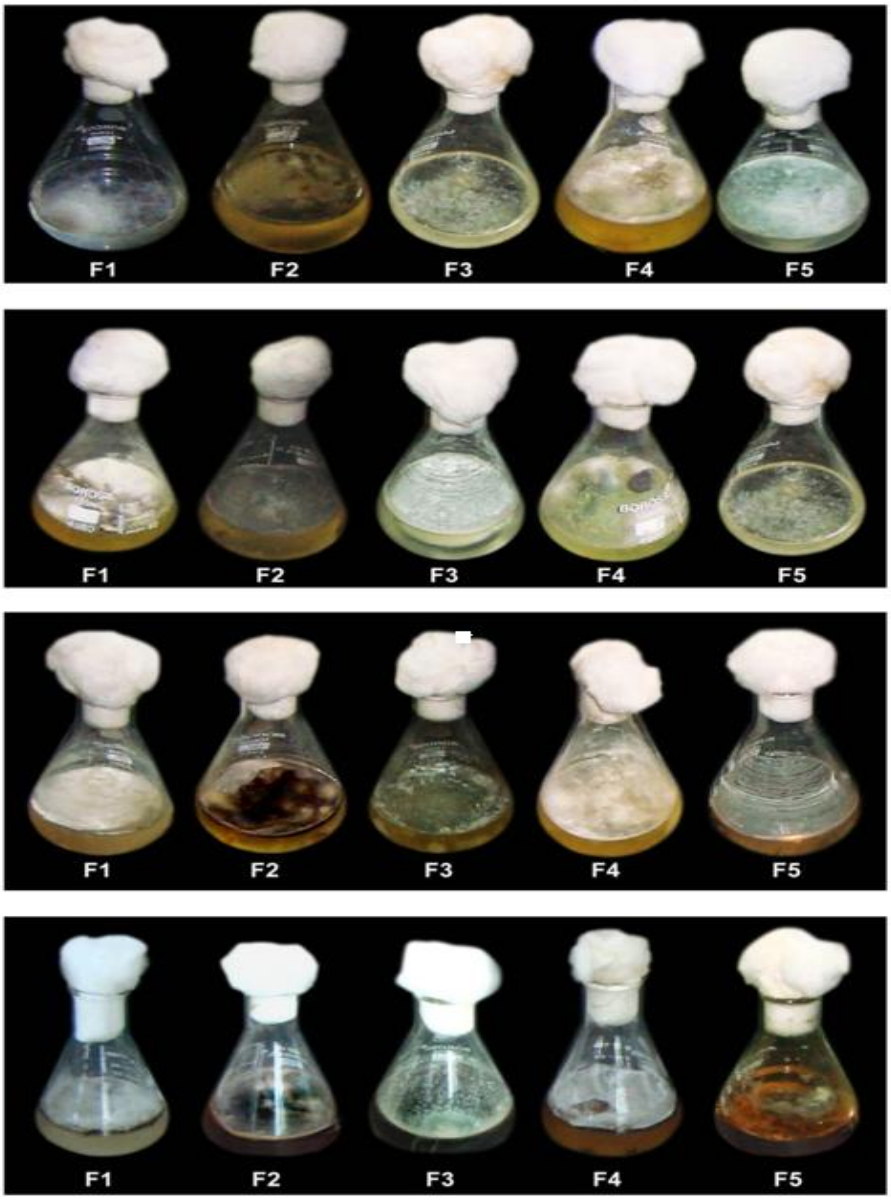
of grown nut. It was purified by single spore isolation technique (Riker and Riker, 1936) and maintained on PDA slants. Lokesha S. Kumar V. and Shete H. S. (1986). Effects of plant extracts on the growth and sporulation of *Aspergillus flavus*. Quadri S. M. H., Srivastava J. K., Bhonde S. R., Pandey U. B. and Bhagechandani P. M. (1982). Fungicidal bioassays against some important pathogen of onion. Grinstein (1992)A, Elad Y, Temkin GN, Rivan Y, Frankel H. Reduced volume application of fungicides for the control of onion rots. K. Raju, M. K. Naik. Effect of Pre-harvest spray of fungicides and botanicals on storage diseases on onion.

Antifungal activities of different medicinal plant extracts were studied in vitro by poison food technique (Nene2000). The different exotics like *Acacia farnesiana, Acacia nilotica,, Argemone mexicana , Ricinus communis, Nerium indicum, Erythrina variegate, Datura metal, Coccinia grandis, Cassia fistula, Terminalia arjuna, Lantana camara, Calotropis gigantea, Jatropha curcas, Boerhavia repens, Catharanthus roseus , Coccinia grandis, Lawsonia inermis, Ipomoea carnea , Cannabis sativa and Euphorbia geniculata* use to against saprophytic pathogenic fungi.

The different exotics plant collect and give 20 gm fresh leaves and 20 ml of distilled water (w/v) was taken while extraction. The extracted material was then filtered through muslin cloth. The volume of extracted sap was made up to 50 ml by distilled water. The medium was then sterilized 15 lbs. 20 minutes. The sterilized medium 20 ml was poured in different plates equally. The petriplates containing leaf extracts were inoculated with loop holder of 10 days old fungal culture and incubated for ten days. Petriplates with PDA medium acted as control. The petriplates were observed on third day for inhibition of growth of saprophytic pathogenic fungi.

Antifungal activity of exotics plant extract against saprophytic pathogenic fungi

PLATE - 1



F1-*Alternaria alternata*, F2-*Cladosporium tenuissimum*, F3-*Penicillium digitatum* *F4-Colletotrichum gloeosporioides and* F5- *Fusarium oxysporum.*

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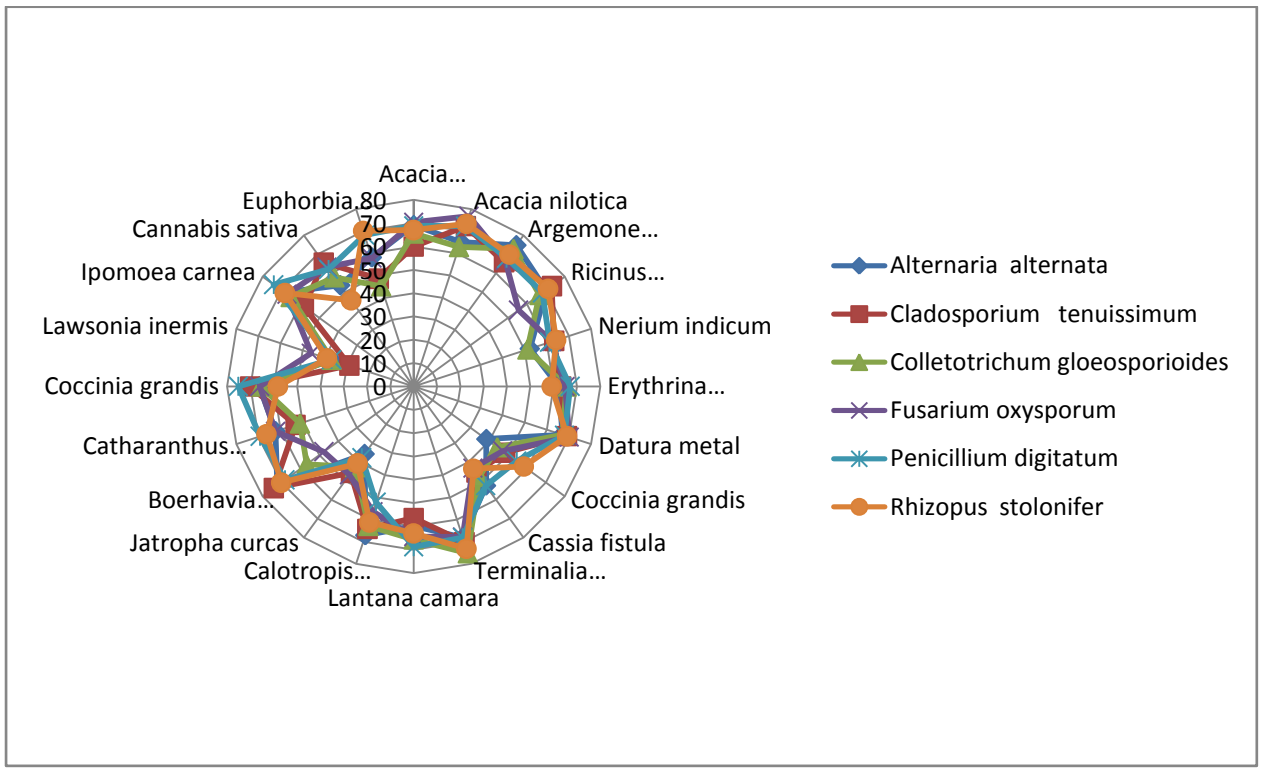
Table No.01: Antifungal activity of exotics plant extract against saprophytic pathogenic fungi

Exotics plant extracts	***Alternaria alternate***	***Cladosporium tenuissimum***	***Colletotrichum Gloeosporioides***	***Fusarium oxysporum***	***Penicillium digitatum***	***Rhizopus stolonifer***
Acacia farnesiana	69.12	59.99	65.50	70.32	68.80	67.00
Acacia nilotica	65.10	72.25	62.80	76.66	72.15	73.25
Argemone mexicana	74.80	65.84	72.80	66.80	67.84	69.84
Ricinus communis	70.16	73.16	66.67	55.56	68.16	71.16
Nerium indicum	52.26	63.26	51.25	62.25	61.26	64.26
Erythrina variegate	62.10	63.10	65.56	64.97	67.10	59.15
Datura metal	67.00	69.00	66.97	70.12	68.00	69.10
Coccinia grandis	38.45	48.35	44.29	47.12	54.56	58.35
Cassia fistula	52.63	45.63	47.80	43.29	52.63	43.63
Terminalia arjuna	68.15	70.15	75.12	67.80	68.15	73.15
Lantana camara	59.89	56.49	65.50	64.32	68.80	63.00
Calotropis gigantea	67.12	64.25	62.80	56.46	52.15	61.25
Jatropha curcas	35.84	45.84	42.80	46.80	37.81	40.84
Boerhavia repens	72.16	74.16	56.67	47.56	68.16	70.16
Catharanthus roseus	62.26	53.26	51.25	62.25	69.26	66.26
Coccinia grandis	66.10	70.10	65.56	65.97	75.15	58.15
Lawsonia inermis	37.00	29.00	36.97	46.12	37.00	39.00
Ipomoea carnea	68.45	58.15	65.19	67.11	74.16	68.15
Cannabis sativa	53.61	65.63	57.80	63.21	62.00	45.55
Euphorbia geniculata	58.15	48.55	45.12	57.80	68.15	70.10

*Percent control efficacy

Antifungal activity of exotics plant extract against saprophytic Pathogenic fungi



RESULT AND DISCUSSION

The application of twenty different exotic plants extracts were applied against six selected fungi *viz. Alternaria alternata, Cladosporium tenuissimum, Colletotrichum gloeosporioides, Fusarium oxysporum, Penicillium digitatum* and *Rhizopus stolonifer* the results were summarized in Table No. 01. It was found that *Acacia farnesiana (*70.32%) against *Fusarium oxysporum, Acacia nilotica* (76.66%) against *Fusarium oxysporum, Ricinus communis* (73.16%) against *Cladosporium tenuissimum, Terminalia arjuna* (75.12%) against *Colletotrichum gloeosporioides, Boerhavia repens* (74.16%) against *Cladosporium tenuissimum, Coccinia grandis* (75.16%) against *Penicillium digitatum , Ipomoea carnea* (74.16%) against *Penicillium digitatum, Euphorbia geniculata* (70.10%) against *Rhizopus stolonifer* and *Argemone mexicana* (72.80%) against *Alternaria alternata* showed the maximum percentage of disease control efficacy. *Lawsonia inermis, Jatropha curcas,* and *Cassia fistula* showed the less percent of disease control efficacy against selected fungi.

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